The Actuarial Profession
making financial sense of the future

Highlights of 2012 Life Conference

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The Risk-Free Rate: Politics, Economics & Investments

14 March 2013

Origins of this presentation

Working party on "How to hedge the risk-free rate under Solvency II"
- Rationale for hedging
- Extrapolation to an "ultimate forward rate"
- QIS5 liquidity premium

Life Conference 2011
Society of Actuaries Ireland
Our Changing Futures
Bristol Actuarial Society
Yorkshire Actuarial Society
Life Conference 2012
Actuary magazine – "Hedging your bets"

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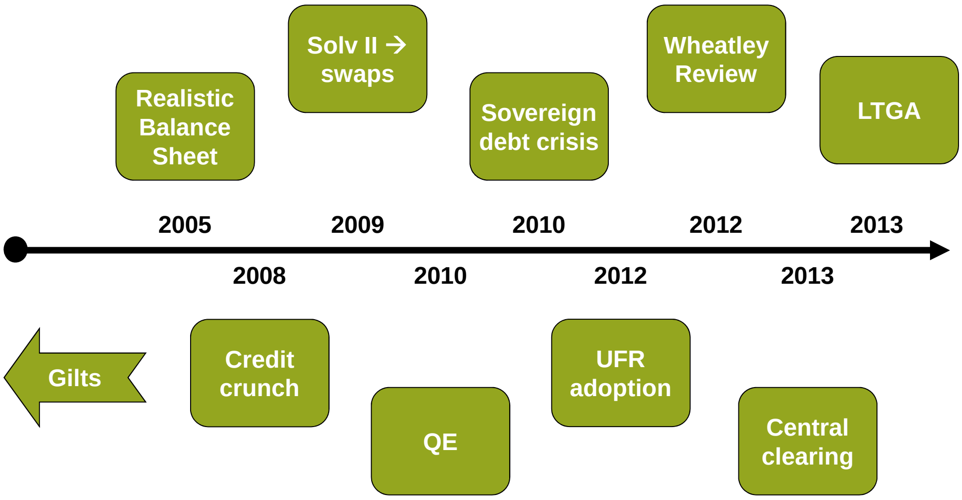
The journey so far …



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Drivers of the risk-free rate

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Insurance Regulation

Solvency II

EUROPEAN COMMISSION

Gove onds

Overni swaps

Libor swaps

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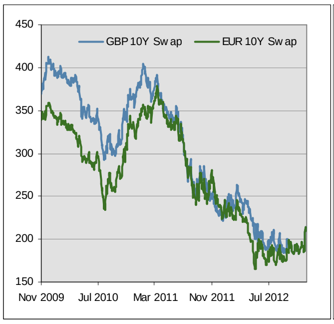
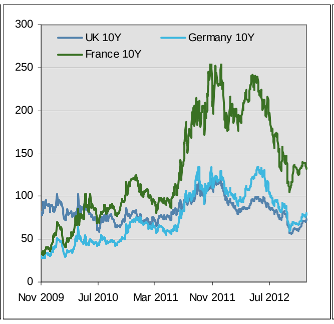
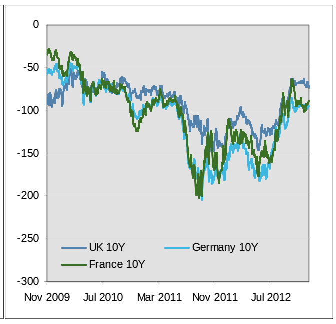
Breaking down the yield on a Government bond

Yield = Swap Rate + Credit Spread + Liquidity Premium

Swap Rate	+	Credit Spread	+	Liquidity Premium







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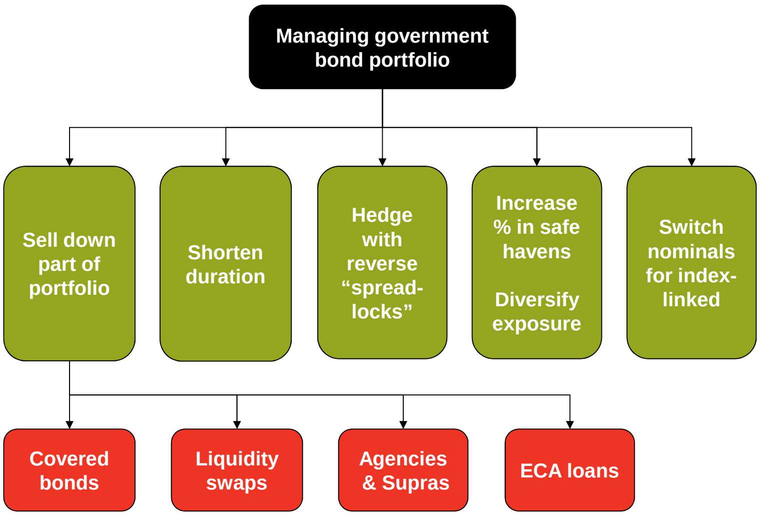
What choices does the insurer have?



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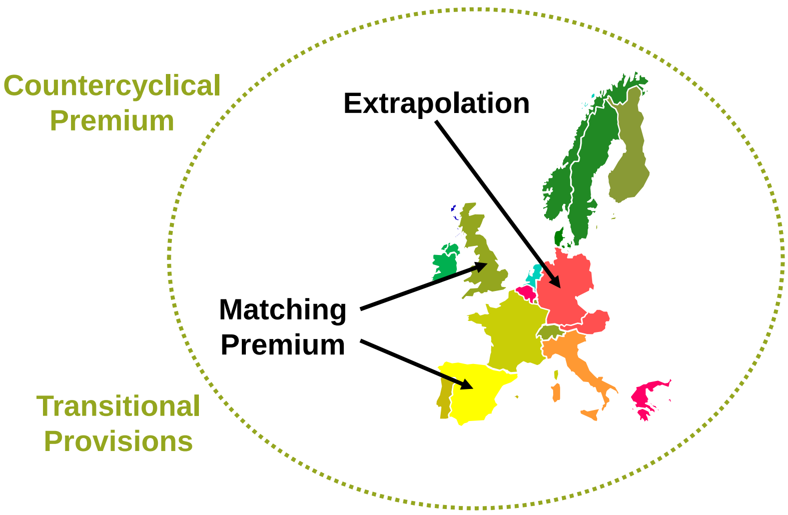
Politics



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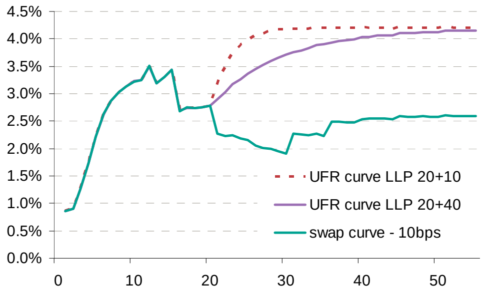
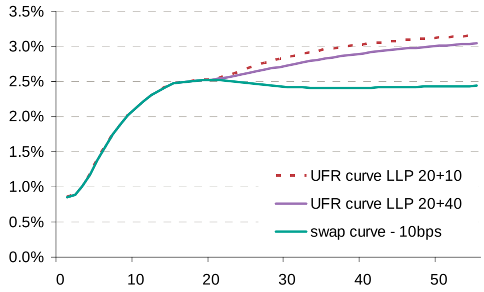
The extrapolation conundrum

1yr fwd rate under different curves



Source: Bloomberg; RBS; 26 April 2012

Resulting liability discount curves

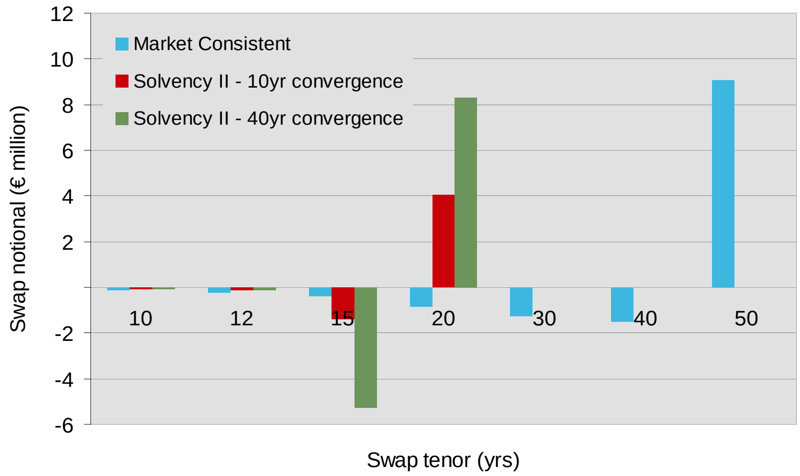


Source: Bloomberg; RBS; 26 April 2012

Solvency II to the rescue

	Market consistent	Solvency II 20yr LLP 10yr convergence	Solvency II 20yr LLP 40yr convergence
Value of 50yr € 10mn liability	€ 3.9 million	€ 2.1 million	€ 2.5 million
PV01 (as % of market consistent)	100%	24%	34%
Modified duration	50	22	27

Delta hedges for 50yr € 10 million liability



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Non-Insurance Regulation

- Traditional method of swap valuation was to use the **6mth Libor swap curve**
- Market moving to **CSA discounting**

What does this mean?

- Derivatives are valued based on the **cost of posting collateral**
- Normally based on overnight index swaps (OIS)
- Some CSAs allow wider collateral

Why?

- Libor previously regarded as bank funding rate – no longer the case
- Collateral at heart of risk management
- LCH moved to OIS in July 2010

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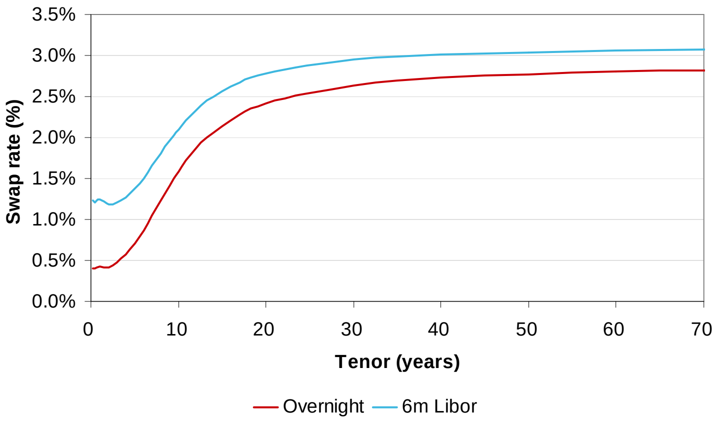
SONIA vs. Libor



Source: RBS 24th October 2012

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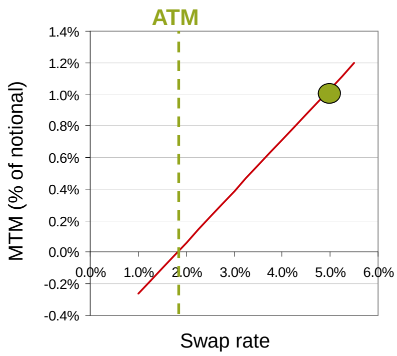
Impact on swap contracts held by Insurers

Example:

Tenor	**10 year**
Notional	**£1m**
Strike	**5%**
Value on Libor curve	**305,200**
Value on OIS curve	**315,400**
Difference	**10,200 (1%)**



- Greater impact for ITM/OTM swaps
- Less impact where CSA allows GBP corps / Multi currency cash

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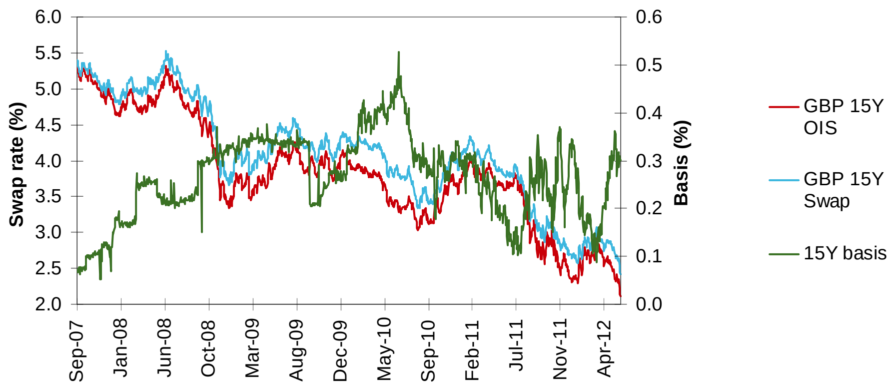
Resulting basis risk under Solvency II



Managing exposure

- Re-striking positions
- Hedging exposure

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Regulatory developments in banking sector

The Wheatley Review of LIBOR:
final report

- *"far reaching programme of reform"*
- *Focus on governance*
- *But alternative benchmarks remain under consideration*

- **Basel 3/CRD IV**
  - Capital requirements **UP**
  - Liquidity requirements **UP**
- **More recently**
  - FSA has **relaxed** some of these requirements

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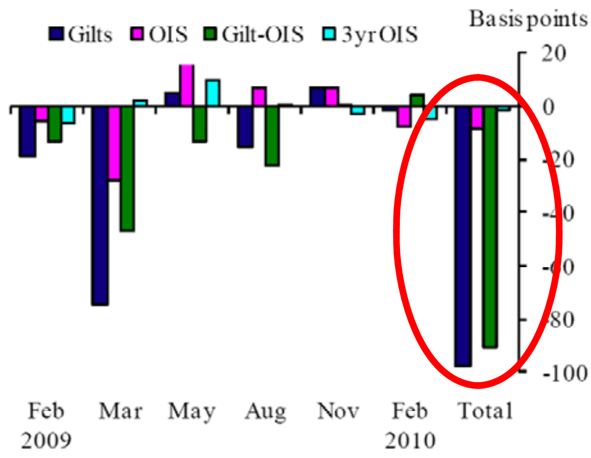
Central Bank Operations

"Summing over the reactions in gilt yields to each of the QE news events gives an overall average fall of just under 100 bps"



Sources: Bloomberg and Bank calculations.

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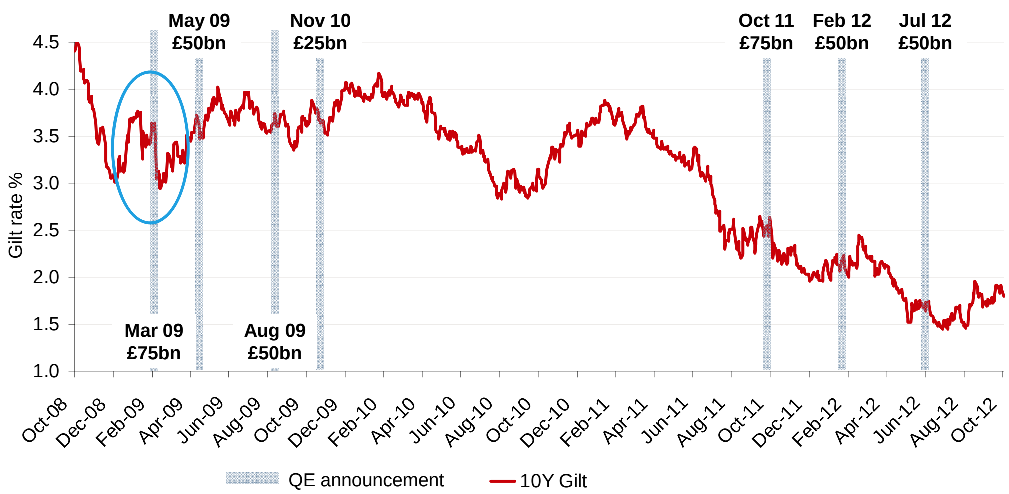
Buy the rumour, sell the fact …



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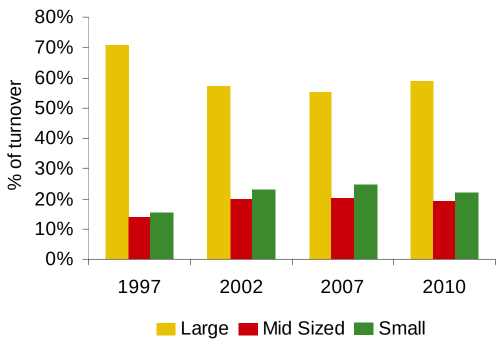
Changing Central Bank reaction functions …

Shift from QE to FLS

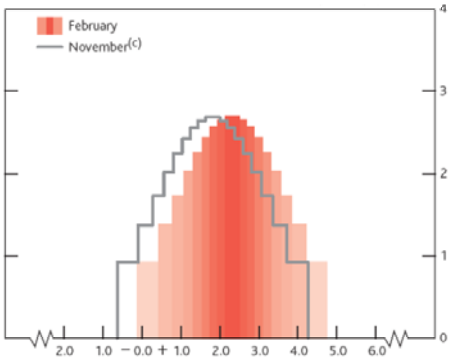
SME's are crucial to economy …



Source: Department for Business Innovation and Skills

Greater inflation tolerance

Upward revision to 2yr forecast …



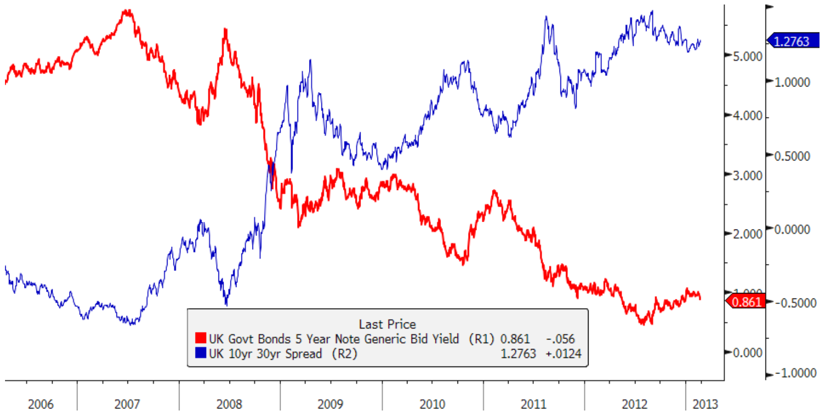
Source: 2013 BoE February Inflation Report
(Projected probabilities of CPI outturns in 2015 Q1)

Economic Environment

- We see Gilt yields being supported at 2.5%
- Market remains driven by very sharp sell offs in a volatile environment
- Recent MPC minutes now stress effect of high Gilt yields on the economy

UK Gilt curve vs. 5 year yields

- 10s30s has shown reluctance to flatten in a rising yield environment
- Market is pricing in risk premium for Gilts
- 5yr and shorter part of the curve to remain supported while interest rates are on hold



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Investment Decisions

- Solvency II basis
- Capital buffer
- Risk appetite
- Market liquidity
- Demand from Insurers
- Economic vs. Regulatory
- Liquidity premium
- Investors
- Asset manager mandates

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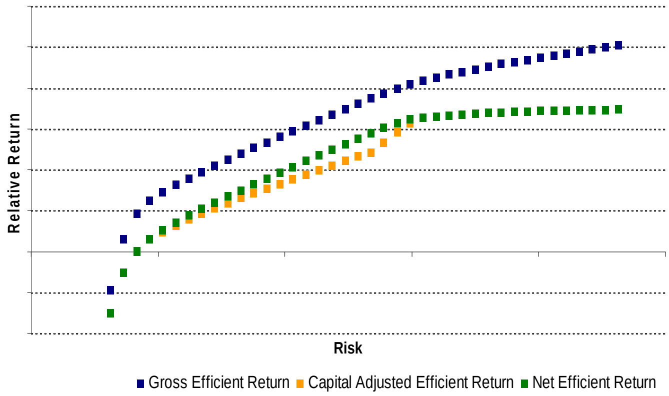
Efficient frontiers

If the cost of capital penalises risk …

… then Investors may switch to lower risk assets …

… hence reducing risk-free yields

Efficient portfolio returns relative to liabilities



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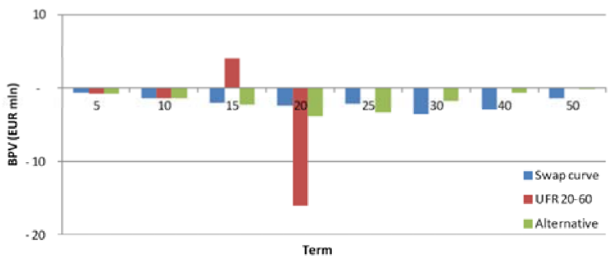
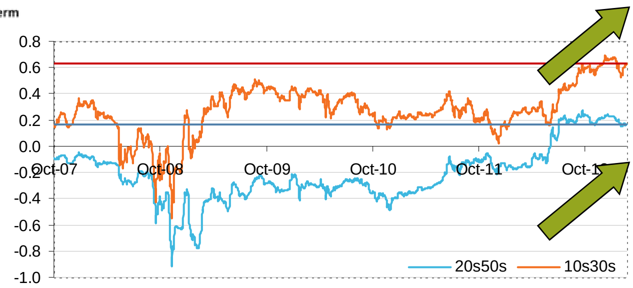
Dutch leading the charge

$$fwd^{SW}_{t-1,t} = (1 - w(t))\ fwd_{t-1,t} + w(t)\ UFR$$



Source:
Academic Community
Comments on CP-12-003
Draft Tech Specs on QIS QIORP II



Source: RBS

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Any questions?

Insurance Regulation

Non-Insurance Regulation

Investment Decisions

Politics

Economic Environment

Central Bank Operations